WE CLAIM:

1. An apparatus comprising:

a primary combustion stage comprising at least one outer wall forming an oxidant chamber having a primary oxidant inlet connected to an oxidant supply conduit and a primary oxidant outlet and at least one inner wall forming a fuel chamber disposed within said oxidant chamber having a primary fuel inlet and a primary fuel outlet oriented in a direction of said primary oxidant outlet, forming a primary annular space between said at least one outer wall and said at least one inner wall;

a pre-combustor stage comprising at least one outer pre-combustor wall forming a pre-combustor fuel chamber having a pre-combustor fuel inlet and at least one inner pre-combustor wall forming a pre-combustor oxidant chamber having a pre-combustor oxidant inlet disposed within said pre-combustor fuel chamber and forming a pre-combustor annular space between said at least one outer pre-combustor wall and said at least one inner pre-combustor wall, said at least one inner pre-combustor wall forming a plurality of pre-combustor fuel outlets, providing fluid communication between said pre-combustor annular space and said pre-combustor oxidant chamber; and

a pre-combustor oxidant supply conduit having one end connected to said oxidant supply conduit and an opposite end connected to said pre-combustor oxidant inlet, providing fluid communication between said oxidant supply conduit and

said pre-combustor oxidant chamber.

2. An apparatus in accordance with Claim 1 further comprising a primary oxidant flow control means proximate said primary oxidant inlet for controlling primary oxidant flow into said primary oxidant chamber.

3. An apparatus in accordance with Claim 1 further comprising a pre-combustor oxidant flow control means disposed between said oxidant supply conduit and said pre-combustor oxidant inlet for controlling pre-combustor oxidant flow into said pre-combustor oxidant chamber.

4. An apparatus in accordance with Claim 2, wherein said primary oxidant flow control means comprises a primary oxidant orifice disposed one of within said oxidant supply conduit and at an oxidant supply conduit end proximate said primary oxidant inlet, said primary oxidant orifice sized to maintain primary oxidant pressure in said oxidant supply conduit higher than a pre-combustor pressure in said pre-combustor stage.

5. An apparatus in accordance with Claim 3, wherein said pre-combustor oxidant flow control means comprises a pre-combustor oxidant orifice disposed one of within and at a pre-combustor oxidant supply conduit of said pre-

combustor oxidant supply conduit.

6. An apparatus in accordance with Claim 1, wherein said fuel chamber is formed between horizontally oriented substantially planar said inner walls converging with respect to each other and vertical said inner walls diverging with respect to each other, forming a substantially rectangular said primary fuel outlet, and said oxidant chamber is formed between horizontally oriented substantially planar said outer walls converging with respect to each other and vertical said outer walls diverging with respect to each other, forming a substantially rectangular primary oxidant outlet.

7. An apparatus in accordance with Claim 1 further comprising a refractory block having a fuel/oxidant inlet side, a fuel/oxidant outlet side and forming a fuel/oxidant conduit extending therebetween, said fuel/oxidant conduit having a rectangular profile which diverges in a horizontal plane and is aligned with said primary oxidant outlet.

8. An apparatus in accordance with Claim 1, wherein said pre-combustor fuel outlets are oriented to introduce fuel from said pre-combustor fuel chamber into said pre-combustor oxidant chamber in a tangential direction.

9. An apparatus in accordance with Claim 7, wherein at least one of said primary fuel outlet and said primary oxidant outlet extend into said fuel/oxidant conduit.

10. An apparatus in accordance with Claim 8, wherein said pre-combustor fuel outlets are arranged into at least two rows.

11. A burner comprising:

a primary combustion stage comprising co-axial outer and inner rectangular passages, said outer rectangular passage having an oxidant inlet and an oxidant outlet and said inner rectangular passage having a fuel inlet and a fuel outlet, said fuel outlet oriented proximate said oxidant outlet;

a pre-combustor stage disposed upstream of said primary combustion stage comprising co-axial inner and outer cylinders, said inner cylinder having a pre-combustor oxidant inlet, a pre-combustion products outlet in fluid communication with said fuel inlet, and a plurality of tangential openings providing fluid communication between said outer cylinder and said inner cylinder, and said outer cylinder having at least one pre-combustion fuel inlet; and

a pre-combustor oxidant conduit having a pre-combustor oxidant conduit oxidant inlet in fluid communication with said oxidant inlet and a pre-combustor oxidant conduit oxidant outlet in fluid communication with said pre-

combustor oxidant inlet.

12. A burner in accordance with Claim 11, wherein each of said inner rectangular passage and said outer rectangular passage comprises horizontally oriented substantially planar walls converging with respect to each other and vertical walls diverging with respect to each other.

13. A burner in accordance with Claim 12 further comprising a refractory block having a fuel/oxidant inlet side, a fuel/oxidant outlet side and forming a fuel/oxidant conduit extending therebetween, said fuel/oxidant conduit having a rectangular profile which diverges in a horizontal plane and is aligned with said oxidant outlet.

14. A burner in accordance with Claim 12 further comprising an oxidant flow control means proximate said oxidant inlet for controlling oxidant flow into said outer rectangular passage.

15. A burner in accordance with Claim 12 further comprising a pre-combustor oxidant flow control means disposed between said oxidant inlet and said pre-combustor oxidant inlet for controlling pre-combustor oxidant flow into said inner cylinder.